# SATRON VCB Optical Brightness Transmitter



The SATRON VCB is a multichannel optical Brightness transmitter, suitable for Brightness measurement in majority of the chemical and mechanical pulp, recycled and paper machine applications.

## TECHNICAL SPECIFICATIONS

**Measuring range and span**
See Selection Chart.

**Zero and Span adjustment**
Zero elevation: Calibrated span is freely selectable on the specified range depending from the desired option. This can be made by using keyboard (display option) or HART®275/375 communicator.

**Damping**
- Time constant is continuously adjustable 0.01 to 60 s.

**Temperature limits**
Ambient: -30 to +80 °C
Process: 0 to + 140 °C
Shipping and storage: -40 to +80 °C.

**Output**
2 current outputs for Cs:
3-wire (3W), 4-20 mA

**Supply voltage and permissible load**
- 24 VDC, -10 %, + 15 %, 100 mA
- 115/230 VAC, -15% ... +10% (device enclosure)

**Humidity limits** 0-100 % RH

**EMC directive 2004/108/EC**
- EN 61326-1:2005

**CONSTRUCTION**
***Materials:***
Sensing element [1]: AISI316L (EN 1.4404), Duplex (EN. 1.4462), Hast. C276 (EN 2.4819), or Titanium Gr2. Safir glass
Coupling [1]: AISI316L (EN 1.4404), Duplex (EN 1.4462), Hast.C276 (EN 2.4819) or Titanium Gr2

**Pressure class:**
- PN25

**Housing with display,**
codes **N0S & N0T:**
Housing: AISI303/316, Seals: Nitrile-rubber and Viton®,
Nameplates: Polyester

**Housing with M12 connector,** code **H0T:** Housing: AISI303/316, Seals: Viton® and NBR.

**Connection hose between sensing element and housing**
Codes **L** and **R** :
PUR signal cable or hose protected with PTFE/AISI316 braiding
**Device enclosure,** code **K:**
EN 1.4301 (AISI304)

**Calibration**
For customer-specified range with minimum damping. (If range is not specified, transmitter is calibrated for maximum range.)

**Electrical connections**
Housing with PLUG connector, code **H0S:**
Connector type DIN 43650 model AF; Pg9 gland for cable; wire cross-section 0.5 to 1.5 mm$^2$.

Housing with M12 connector, code **H0T**:
M12 plug connector

Housing with display, code **N0S:**
Connector type DIN 43650 model AF; Pg9 gland for cable; wire cross-section 0.5 to 1.5 mm$^2$.

Housing with display, code **N0T**:
M12 plug connector

Device enclosures (with display), code **K**:
- PG13,5 inlet, 3 pcs
- The sensor signal M12 plug connector.

**I/O-connections**
bout1-3
Relay, grounding contact

| | |
|---|---|
| Maximum voltage | 35 V |
| Maximum current | 50 mA |
| Maximum leakage current | 10 µA |

bin1-3

| | |
|---|---|
| NC (no connection) | OFF |
| 0...2 V | ON |

Minimum values for switch in use

| | |
|---|---|
| Voltage | 16 V |
| Current | 4 mA |
| Leakage current | 1 mA |

Current output1

| | |
|---|---|
| Range | 3.5...23 mA |
| Maximum load | 600 Ω |
| Factory setting | 4...20 mA |

Current output2
Internal power supply
Current output 2 has same ground as binary IO

| | |
|---|---|
| Maximum load | 400 Ω |
| Range | 3.5...23 mA |
| Factory setting | 4...20 mA |

External power supply
Current output 2 is galvanically isolated

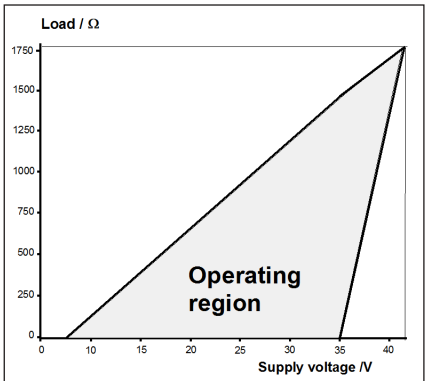
| | |
|---|---|
| Maximum supply voltage | 35 VDC |
| Range | 3.5...23 mA |
| Factory setting | 4...20 mA |
| Maximum load, | See picture below |
| Maximum isolation voltage | 100 VDC |

**Process connections**
- With G1 connecting thread

**Protection class:** See Selection chart.

**Weight**

| | |
|---|---|
| Housing with M12 connector **(H0T )**: | 1.3 kg |
| Housing with display **(N0S** & **N0T)**: | 1.7 kg |
| Remote Housing **(L):** | 2.9 kg |
| Remote sensor **(R):** | 2.9 kg |
| Device enclosure **(K)** | 6,2 kg |



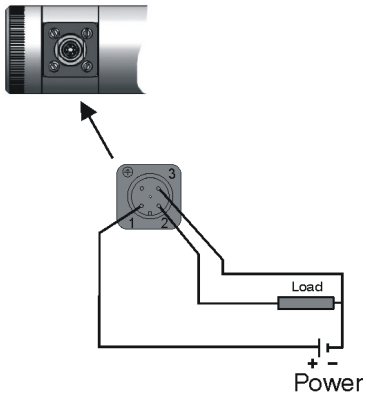

Min. load using HART®-communication 250 W

R max = $\frac{\text{Supply voltage -5 V}}{\text{I max}}$

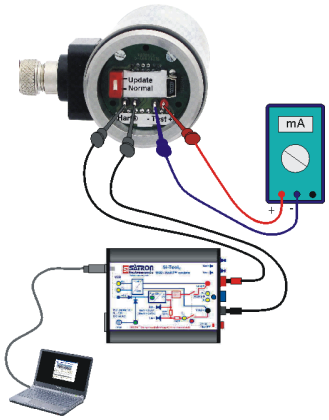
I max = 20,5 mA
I max = 22,5 mA
(when the alarm current 22,5 mA is on)

Current output 2
External power supply

[1] Parts in contact with process medium

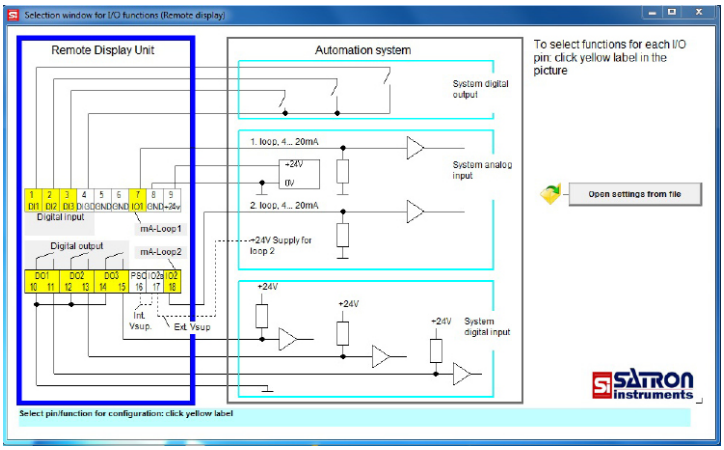


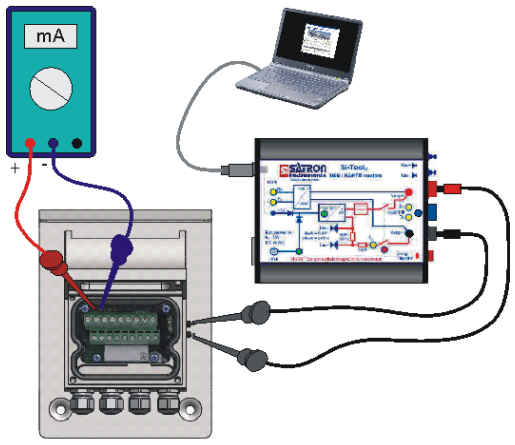

**Wiring**
Housing with M12-connector, code **HT**



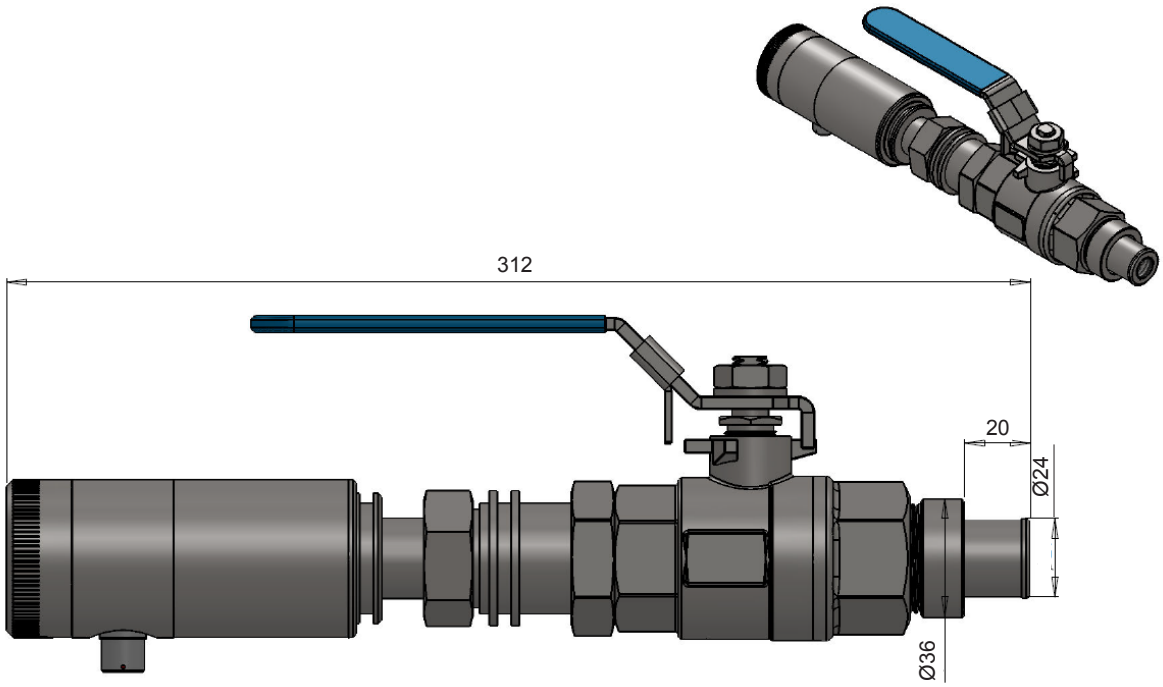

**Wiring**
Housing with M12-connector, test connector box, code **HT**

**Wiring**
Remote electronic in the device enclosure. Power supply 115/230 V 50/60 Hz, code **K**.
Only housing type **L** and probe type **R** with display.

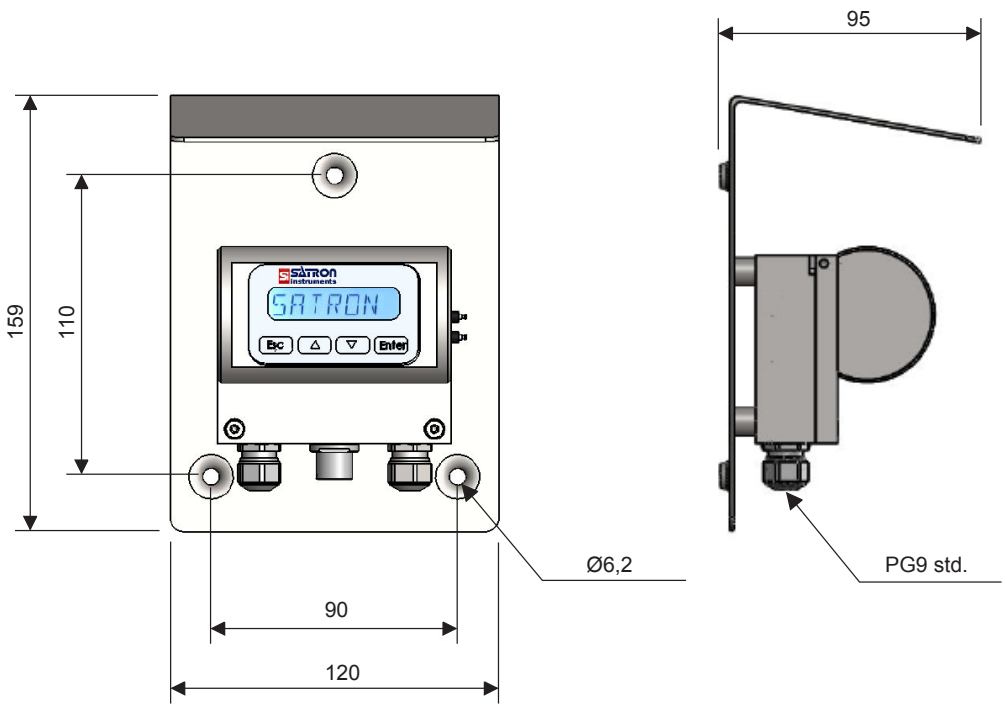



**Wiring**
Remote electronics housing with display, code **L**




Dimensions Satron VCB




Satron VCB with L-housing

## Selection Chart

| Adjustability | Measuring Range | Span, min |
|---|---|---|
| Brightness | 20 - 95° SCAN | |
| Consistency | 0...12% Cs | 1% Cs |

**Process temperature limits** **N** Normal version 0 ...+140 °C

**Output** **S** 4-20mA DC/HART®

**Material of wetted parts**

| Body | | Lens | | Lens seal | |
|---|---|---|---|---|---|
| **2** | AISI316L (EN 1.4404) | **2** | Sapphire glass | **1** | EPDM |
| **3** | Hast. C 276 (EN 2.4819) | | | **2** | FPM (Viton®) |
| **6** | Titanium Gr2 (EN 3.7035) | | | **3** | FFPM (Kalrez®) |
| **8** | Duplex (EN 1.4462) | | | **4** | PTFE |

**Housing type**
- **N** Housing with display and pushbuttons (only with remote probe "R")
- **H** Housing with, no display, (only one mA output)
- **L** Remote electronics housing with display

**Probe type**
- **0** No remote probe
- **R** Remote measuring probe, IP68

**Connection type**
- **T** M12, IP67
- **U** M12 & USB (only with N housing), IP67
- **V** PG9 (always with L housing), IP66

**Cable Material**
- **0** No, L or R selected
- **1** PUR cable.
- **2** AISI316L braided PTFE hose.
- **3** Steel reinforced PUR hose.
- **4** PVC cable

**Cable length**
- **0** No L or R option selected
- **2** 15 meter

**Light source**
- **4** 880nm / 640 nm / 530 nm
- **7** 880nm / 640 nm / 465 nm

**Process connections**
**B1** G1A ball valve insertion. Extension diameter ø 24mm

**Device enclosure**

**K** Remote electronic in the device enclosure. Power supply 115/230 V, IP66.
Only housing type **L** and probe type **R** with display.

| | | | | | | | | | | | | / | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Documentation**

**Calibration certificate** **AE** English

**Installation and operating instructions** **IE** English **IF** Finnish **FR** French

**Material certificates**
- **0** No material certificate
- **MC1** Raw material certificate without appendices, in accordance with SFS-EN 10204-2.1 (DIN 50049-2.1) standard
- **MC2** Raw material certificate for wetted parts, in accordance with SFS-EN 10204-2.2 (DIN 50049-2.2) standard
- **MC3** Raw material certificate for wetted parts, in accordance with SFS-EN 10204-3.1 B (DIN 50049-3.1 B) standard

*We reserve the right for technical modifications without prior notice.*

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